

CLAIMS

1. A rotary fluid machine comprising a first rotation mechanism (2F) and a second rotation mechanism (2S), each of which including:

5 a cylinder (21) having an annular cylinder chamber (50);

an annular piston (22) which is contained in the cylinder chamber (50) to be eccentric to the cylinder (21) and divides the cylinder chamber (50) into an outer working chamber (51) and an inner working chamber (52); and

10 a blade (23) which is arranged in the cylinder chamber (50) to divide each of the working chambers (51, 52) into a high pressure region and a low pressure region, the piston (22) and the cylinder (21) serving as co-operating parts and any one of the piston (22) and the cylinder (21) being stationary and the other being moving such that the moving co-operating part rotates about the stationary co-operating part, wherein

15 the first rotation mechanism (2F) and the second rotation mechanism (2S) are arranged to be adjacent to each other with a partition plate (2c) sandwiched therebetween and

the two moving co-operating parts (21) or the two stationary co-operating parts (22) of the first rotation mechanism (2F) and the second rotation mechanism (2S) are arranged such that one of the co-operating parts is provided at one side of the end plate (2c) and the other is provided at the other side of the end plate (2c).

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2. The rotary fluid machine according to claim 1, wherein

the inner working chambers (52) of the cylinder chambers (50) of the first rotation mechanism (2F) and the second rotation mechanism (2S) serve as low-stage compression chambers and

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the outer working chambers (51) of the cylinder chambers (50) of the first rotation mechanism (2F) and the second rotation mechanism (2S) serve as high-stage compression

chambers.

3. The rotary fluid machine according to claim 1, wherein
the outer working chambers (51) of the cylinder chambers (50) of the first rotation
5 mechanism (2F) and the second rotation mechanism (2S) serve as compression chambers
and

the inner working chambers (52) of the cylinder chambers (50) of the first rotation
mechanism (2F) and the second rotation mechanism (2S) serve as expansion chambers.

10 4. The rotary fluid machine according to claim 1, wherein
the partition plate (2c) serves as the end plates (26) of the co-operating parts (21)
of the first rotation mechanism (2F) and the second rotation mechanism (2S).

5. The rotary fluid machine according to claim 1, wherein
15 the co-operating part (21) of the first rotation mechanism (2F) and the co-operating
part (21) of the second rotation mechanism (2S) adjacent to the first rotation mechanism
(2F) have individual end plates (26), and
the partition plate (2c) is formed of the end plates (26) of the co-operating parts
(21) of the first and second rotation mechanisms (2F, 2S).

20 6. The rotary fluid machine according to claim 1, wherein
the moving co-operating parts (21) of the first and second rotation mechanisms (2F,
2S) are connected to a drive shaft (33) and
each of the first rotation mechanism (2F) and the second rotation mechanism (2S)
25 is provided with a compliance mechanism (60) for adjusting the position of the
co-operating parts (21, 22) in the axial direction of the drive shaft (33).

7. The rotary fluid machine according to claim 1, wherein
the moving co-operating parts (21) of the first and second rotation mechanisms (2F, 2S) are connected to a drive shaft (33) and

each of the first rotation mechanism (2F) and the second rotation mechanism (2S)
5 is provided with a compliance mechanism (60) for adjusting the position of the
co-operating parts (21) in the direction orthogonal to the axial direction of the drive shaft
(33).

8. The rotary fluid machine according to claim 4, wherein
10 the moving co-operating parts (21) of the first and second rotation mechanisms (2F, 2S) are connected to a drive shaft (33) and

a balance weight (75) is provided at part of the drive shaft (33) located between the
end plates (26) of the co-operating parts of the first rotation mechanism (2F) and the
second rotation mechanism (2S) adjacent to each other.

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9. The rotary fluid machine according to claim 1, wherein
the first rotation mechanism (2F) and the second rotation mechanism (2S) are
configured to rotate with a 90° phase difference from each other.

10. The rotary fluid machine according to claim 1, wherein
20 in each of the first and second rotation mechanisms (2F, 2S), part of the annular
piston (22) is cut off such that the piston (22) is C-shaped,

the blade (23) extends from the inner wall surface to the outer wall surface of the
cylinder chamber (50) and passes through the cut-off portion of the piston (22) and

25 a swing bushing is provided in the cut-off portion of the piston (22) to contact the
piston (22) and the blade (23) via the surfaces thereof such that the blade (23) freely
reciprocates and the blade (23) and the piston (22) make relative swings.